Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for detecting flaws in a disk drive, comprising:

sampling a read signal provided by ~~derived from~~ reading a data pattern from ~~at least a portion of~~ a track on a disk to obtain n samples;

deriving a value from m of the ~~said~~ n samples, wherein the m samples are significant samples that each have ~~of said m samples having~~ an amplitude greater than 50% of an ~~the~~ amplitude of an isolated pulse in the read signal and greater than an amplitude of the other samples of the n samples~~, wherein said m samples are significant samples~~;

comparing the ~~said~~ derived value to a threshold value; and

reporting ~~using said step of comparing to determine whether there is~~ a flaw in the ~~said at least a portion of said~~ track if the comparison is unacceptable~~on said disk~~.

2-4. (cancelled)

5. (currently amended) The method of Claim 1, wherein the ~~said at least a portion of a track is encoded using a predetermined pattern, and wherein said~~ m samples are taken at times corresponding to expected peak and near peak values in the read ~~said~~

~~sampled~~ signal, and the other samples are not taken at times corresponding to expected peak and near peak values in the read signal.

6. (currently amended) The method of Claim 1, wherein the derived value is ~~each of said m samples has a magnitude, and wherein said step of deriving a value from m of said n samples comprises:~~

~~calculating~~ a sum of ~~comprising said~~ magnitudes of the ~~each of said~~ m samples.

7. (currently amended) The method of Claim 1, wherein the derived value is an average of ~~each of said m samples has a magnitude, and wherein said step of deriving a value from m of said n samples comprises:~~

~~calculating a sum comprising said~~ magnitudes of the ~~each of said~~ m samples~~; and~~

~~dividing said sum by m~~.

8. (currently amended) The method of Claim 1, wherein the derived value is an integration of ~~each of said m samples has a magnitude, and wherein said step of deriving a value from m of said n samples comprises:~~

~~integrating said~~ magnitudes of the ~~each of said~~ m samples.

9. (currently amended) The method of Claim 1, wherein the derived value is based on difference values ~~said step of deriving a value from m of said n samples comprises:~~

~~calculating a difference~~ between ~~an absolute value of a~~ magnitudes of the ~~each of~~ ~~said~~ m samples and an optimal value.

10. (currently amended) The method of Claim 9, wherein the derived value is ~~said step of deriving a value from m of said n samples further comprises:~~

~~calculating~~ a sum of the difference values~~each of said differences~~.

11. (currently amended) The method of Claim 9, wherein the derived value is ~~said step of deriving a value from m of said n samples further comprises:~~

~~calculating~~ an average of the difference values~~each of said differences~~.

12. (currently amended) The method of Claim 9, wherein the derived value is an integration of the difference values~~said step of deriving a value from m of said n samples comprises:~~

~~integrating each of said differences~~

13. (currently amended) The method of Claim 1, wherein ~~said step of~~ deriving the derived ~~a~~ value includes ~~from m of said n samples comprises:~~

filtering the n samples to obtain the ~~said~~ m samples and to discard the other samples.

14. (currently amended) The method of Claim 13, wherein the data pattern is ~~a repeated pattern of data is encoded in said at least a portion of a track in~~ a 2T data pattern,

and the filtering has a~~wherein in~~ delay operator ~~operation~~ notation of $1 - D^2 + D^4 - D^6 \ldots \pm D^{2n}$ ~~a filter used in said step of filtering is given by the function $1 - D^2 + D^4 - D^6 \ldots \pm D^{2n}$~~.

15. (currently amended) The method of Claim 13, wherein the data pattern is ~~a repeated pattern of data is encoded in said at least a portion of a track in~~ a 3T data pattern, and the filtering has a ~~wherein in~~ delay operator notation of $1 + D - D^3 - D^4 + D^6 + D^7 \ldots [-/+ D^{n-1} -/+ D^n]$ ~~said filter is given by the function $1 + D - D^3 - D^4 + D^6 + D^7 \ldots [-/+ D^{n-1} -/+ D^n]$~~.

16. (currently amended) The method of Claim 1, wherein the significant samples contain intersymbol interference~~m is equal to n~~.

17. (cancelled)

18. (currently amended) The method of Claim 1, wherein m is 50% of n ~~is greater than m~~.

19. (currently amended) The method of Claim 1, wherein m is 5~~n is greater than 1~~.

20. (cancelled)

21. (currently amended) A method for detecting flaws in a disk drive, comprising:

magnetizing ~~each bit cell included in a plurality of~~ bit cells on a disk ~~in said disk drive~~ by writing a data pattern to the bit cells~~in at least one of two directions~~;

reading the data pattern from the ~~n of said plurality of~~ bit cells to provide a read signal;

sampling the read signal ~~a signal derived from said n bit cells during said step of reading~~ to obtain ~~at least~~ n samples;

selecting m of the n samples, wherein the m samples are significant samples that are taken at times corresponding to expected peak and near peak values in the read signal and that each have an amplitude greater than 50% of an amplitude of an isolated pulse in the read signal, and the other samples of the n samples are not taken at times corresponding to expected peak and near peak values in the read signal;

deriving a value from the m ~~of said at least n~~ samples;

comparing the ~~said~~ derived value to a threshold value; and

reporting ~~using said step of comparing to determine whether there is~~ a flaw in the ~~said plurality of~~ bit cells if the comparison is unacceptable~~on said disk~~.

22-24. (cancelled)

25. (currently amended) The method of Claim 21, wherein the derived value is ~~said step of deriving a value from m of said at least n samples comprises calculating~~ a sum of ~~comprising~~ an absolute value of each of the ~~said~~ m samples

26. (currently amended) The method of Claim 21, wherein the derived value is an average of ~~said step of deriving a value from m of said at least n samples comprises:~~

~~calculating a sum comprising~~ an absolute value of each of the ~~said~~ m samples~~;~~

~~dividing said sum by m to obtain an average value of said m samples~~.

27. (currently amended) The method of Claim 21, wherein the derived value is based on difference values ~~said step of deriving a value from m of said at least n samples comprises:~~

~~calculating a difference~~ between an absolute value of each of the ~~said~~ m samples and an optimal value ~~to obtain m differences~~.

28. (currently amended) The method of Claim 27, wherein the derived value is ~~said step of deriving a value from m of said at least n samples further comprises:~~

~~calculating~~ a sum of the difference values ~~each of said m differences~~.

29. (currently amended) The method of Claim 27, wherein the derived value is ~~said step of deriving a value from m of said at least n samples further comprises:~~

~~calculating~~ an average of the difference values ~~each of said m differences~~.

30. (currently amended) The method of Claim 27, wherein the derived value is an integration of the difference values ~~said step of deriving a value from m of said at least n samples further comprises:~~

~~integrating each of said m differences~~.

31. (currently amended) The method of Claim 21, wherein selecting the m samples includes ~~said step of deriving a value from m of said at least n samples comprises:~~

~~———~~filtering the ~~said~~ n samples to pass the m samples and discard the other samples.

32. (currently amended) The method of Claim 31, wherein the data pattern is an iT data pattern that causes a magnetic transition every i^{th} bit cell, and the filtering increases a signal-to-noise ratio of the ~~21, wherein said step of deriving a value from m of said at least n samples comprises:~~

~~——— integrating an absolute value of each of said~~ m samples.

33. (currently amended) The method of Claim 31, ~~21,~~ wherein the data pattern is a 2T data pattern that causes a magnetic transition ~~said step of magnetizing in at least one of two directions each bit cell included in a plurality of bit cells on said disk comprises creating a change in magnetization on~~ every second i^{th}-bit cell, and the ~~wherein said step of deriving a value from m of said at least n samples comprises~~ filtering has a delay operator notation of $1 - D^2 + D^4 - D^6 \ldots \pm D^{2n}$ ~~said m samples with a filter given by $1 - D^2 + D^4 - D^6 \ldots \pm D^{2n}$.~~

34-40. (cancelled)

41. (currently amended) The method of Claim 31, wherein the data pattern is a 3T data pattern that causes a magnetic transition every third bit cell, and the filtering has a ~~hard disk drive of Claim 38, further comprising a filter, wherein said filter performs, in~~ delay operator notation of $1 + D - D^3 - D^4 + D^6 + D^7 \ldots [-/+ D^{n-1} -/+ D^n]$~~, a function given by $1 + D - D^3 - D^4 + D^6 + D^7 \ldots [-/+ D^{n-1} -/+ D^n]$~~.

42. (currently amended) The method of Claim 21, including~~hard disk drive of Claim 38, further comprising~~:

storing the m samples in a shift register~~, wherein at least said m samples can be stored~~;

summing the m samples in a summing block to obtain the derived value~~, wherein said m samples can be added to produce a sum~~; and

comparing the derived value to the threshold value in a comparator~~, wherein said sum can be compared to said threshold value~~.

43. (new) The method of Claim 21, including selecting the m samples at times corresponding to magnetic transitions in the data pattern.

44. (new) The method of Claim 21, including selecting the m samples using a moving window.

45. (new) The method of Claim 21, including performing the method in a PRML channel in the disk drive.

46. (new) A method for detecting flaws in a disk in a disk drive, comprising:

writing a data pattern to a track on the disk using a transducer head;

reading the data pattern from the track to provide a read signal using the transducer head;

sampling the read signal to obtain samples;

filtering the samples to obtain significant samples that each have sufficient amplitude and discard other samples that each have insufficient amplitude;

deriving a value from the significant samples and from no other samples in the read signal;

comparing the derived value to a threshold value; and

reporting a flaw in the track if the comparison is unacceptable.

47. (new) The method of Claim 46, wherein the significant samples each have an amplitude greater than a predetermined percentage of an amplitude of an isolated pulse in the read signal.

48. (new) The method of Claim 46, wherein the significant samples each have an amplitude greater than 50% of an amplitude of an isolated pulse in the read signal.

49. (new) The method of Claim 46, wherein the significant samples are taken at times corresponding to expected peak and near peak values in the read signal, and the other samples are not taken at times corresponding to expected peak and near peak values in the read signal.

50. (new) The method of Claim 49, wherein the expected peak and near peak values correspond to magnetic transitions in the data pattern.

51. (new) The method of Claim 50, wherein the magnetic transitions occur periodically every i^{th} bit cell in the track.

52. (new) The method of Claim 46, wherein the significant samples include intersymbol interference.

53. (new) The method of Claim 46, wherein the significant samples exclude zero-crossings in the read signal.

54. (new) The method of Claim 46, wherein the filtering increases a signal-to-noise ratio of the significant samples.

55. (new) The method of Claim 46, wherein the data pattern is a 2T data pattern that includes magnetic transitions every two bit cells in the track, and the filtering has a delay operator notation of $1 - D^2 + D^4 - D^6 \ldots \pm D^{2n}$.

56. (new) The method of Claim 46, wherein the data pattern is a 3T data pattern that includes magnetic transitions every three bit cells in the track, and the filtering has a delay operator notation of $1 + D - D^3 - D^4 + D^6 + D^7 \ldots [-/+ D^{n-1} -/+ D^n]$.

57. (new) The method of Claim 46, wherein deriving the derived value includes selecting a predetermined number of the significant samples using a moving window.

58. (new) The method of Claim 57, wherein the predetermined number is five.

59. (new) The method of Claim 46, wherein deriving the derived value includes adding magnitudes of the significant samples.

60. (new) The method of Claim 46, wherein deriving the derived value includes averaging magnitudes of the significant samples.

61. (new) The method of Claim 46, wherein deriving the derived value includes integrating magnitudes of the significant samples.

62. (new) The method of Claim 46, including reporting the flaw if the derived value is less than the threshold value.

63. (new) The method of Claim 46, including:

storing the significant samples in a shift register on a FIFO basis;

transferring the significant samples from the shift register to a summing block;

summing the significant samples in the summing block to obtain the derived value;

transferring the derived value from the summing block to a comparator;

comparing the derived value to the threshold value in the comparator; and

generating a flaw detect signal in the comparator if the comparison is unacceptable.

64. (new) The method of Claim 46, including performing the method in a PRML channel in the disk drive.

65. (new) The method of Claim 64, including the channel reporting the flaw to a controller in the disk drive.

66. (new) A method for detecting flaws in a disk in a disk drive, comprising:

writing a data pattern to a track on the disk using a transducer head;

reading the data pattern from the track to provide a read signal using the transducer head;

sampling the read signal to obtain samples;

filtering the samples to obtain significant samples and discard other samples, wherein the significant samples are taken at times corresponding to expected peak and near peak values in the read signal and each have an amplitude greater than 50% of an amplitude of an isolated pulse in the read signal, the other samples are not taken at times corresponding to expected peak and near peak values in the read signal, and the expected peak and near peak values correspond to magnetic transitions in the data pattern;

selecting a predetermined number of the significant samples using a moving window;

deriving a value from the selected significant samples and from no other samples in the read signal;

comparing the derived value to a threshold value; and

reporting a flaw in the track if the comparison is unacceptable.

67. (new) The method of Claim 66, wherein the filtering increases a signal-to-noise ratio of the significant samples.

68. (new) The method of Claim 66, wherein the filtering discards zero-crossing samples in the read signal.

69. (new) The method of Claim 66, wherein the data pattern is a 2T data pattern that includes magnetic transitions every two bit cells in the track, and the filtering has a delay operator notation of $1 - D^2 + D^4 - D^6 \ldots \pm D^{2n}$.

70. (new) The method of Claim 66, wherein the data pattern is a 3T data pattern that includes magnetic transitions every three bit cells in the track, and the filtering has a delay operator notation of $1 + D - D^3 - D^4 + D^6 + D^7 \ldots [-/+ D^{n-1} -/+ D^n]$.

71. (new) The method of Claim 66, wherein deriving the derived value includes adding magnitudes of the selected significant samples.

72. (new) The method of Claim 66, wherein deriving the derived value includes averaging magnitudes of the selected significant samples.

73. (new) The method of Claim 66, wherein deriving the derived value includes integrating magnitudes of the selected significant samples.

74. (new) The method of Claim 66, including:

storing the significant samples in a shift register on a FIFO basis;

transferring the significant samples from the shift register to a summing block;

summing the significant samples in the summing block to obtain the derived value;

transferring the derived value from the summing block to a comparator;

comparing the derived value to the threshold value in the comparator; and

generating a flaw detect signal in the comparator if the comparison is unacceptable.

75. (new) The method of Claim 66, including performing the method in a PRML channel in the disk drive during manufacture of the disk drive after assembly of the disk drive.

76. (new) A method for detecting flaws in a disk in a disk drive, comprising:

writing a data pattern to a track on the disk using a transducer head;

reading the data pattern from the track to provide a read signal using the transducer head;

sampling the read signal to obtain samples that contain intersymbol interference;

filtering the samples to obtain significant samples and discard other samples, wherein the significant samples are taken at times corresponding to expected peak and near peak values in the read signal and each have an amplitude greater than 50% of an amplitude of an isolated pulse in the read signal, the other samples are not taken at times corresponding to expected peak and near peak values in the read signal, and the expected peak and near peak values correspond to magnetic transitions in the data pattern;

selecting a predetermined number of the significant samples using a moving window;

deriving a value from the selected significant samples and from no other samples in the read signal;

comparing the derived value to a threshold value; and

reporting a flaw in the track if the derived value is less than the threshold value.

77. (new) The method of Claim 76, wherein the filtering increases a signal-to-noise ratio of the significant samples.

78. (new) The method of Claim 76, wherein the filtering discards zero-crossing samples in the read signal.

79. (new) The method of Claim 76, wherein the data pattern is a 2T data pattern that includes magnetic transitions every two bit cells in the track, and the filtering has a delay operator notation of $1 - D^2 + D^4 - D^6 \ldots \pm D^{2n}$.

80. (new) The method of Claim 76, wherein the data pattern is a 3T data pattern that includes magnetic transitions every three bit cells in the track, and the filtering has a delay operator notation of $1 + D - D^3 - D^4 + D^6 + D^7 \ldots [-/+ D^{n-1} -/+ D^n]$.

81. (new) The method of Claim 76, wherein deriving the derived value includes adding magnitudes of the selected significant samples.

82. (new) The method of Claim 76, wherein deriving the derived value includes averaging magnitudes of the selected significant samples.

83. (new) The method of Claim 76, wherein deriving the derived value includes integrating magnitudes of the selected significant samples.

84. (new) The method of Claim 76, including:

storing the significant samples in a shift register on a FIFO basis;

transferring the significant samples from the shift register to a summing block;

summing the significant samples in the summing block to obtain the derived value;

transferring the derived value from the summing block to a comparator;

comparing the derived value to the threshold value in the comparator; and

generating a flaw detect signal in the comparator if the derived value is less than the threshold value.

85. (new) The method of Claim 76, including performing the method in a PRML channel in the disk drive during manufacture of the disk drive after assembly of the disk drive.